MECHANICAL AND ELECTRICAL SUPPORT
OF THE FAILING HEART

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With an increasingly aging population, heart failure is a major health issue, affecting more than 10% of the population over 65 years of age. Major advancements in the medical therapy of HF, combined with automatic implantable cardioverter-defibrillators and cardiac resynchronization therapy, have substantially reduced the mortality and morbidity of chronic HF. Mortality remains high, and the availability of donor hearts for transplantation is limited. There has been and continues to be a need for alternative therapies to support the failing heart. Various surgical approaches have been examined in the hope of improving the outcome of congestive cardiac failure. The development of mechanical pumps designed to assist or replace cardiac function started three decades ago with the National Heart, Lung, and Blood Institute’s request for proposals to develop an artificial heart. Significant progress has been made, with ventricular assist devices evolving from bulky extracorporeal devices to internalized miniaturized devices. Improvements in durability, thrombogenicity, ease of implantation, and patient selection have allowed expanding indications for these devices.